

Shipping of an ECD from a gas chromatograph (GC) at South Pole Station, Antarctica

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- Secondary contact:** Brian Vasel, NOAA-ESRL (Boulder), ESRL Assistant-RSO, GMD
Phone: 303-497-6655, Email: Brian.Vasel@noaa.gov
- How often:** Seldom, as needed.
Summer season ONLY (via NY Air National Guard C-130s)
Only as directed by GC point of contact in Boulder.
- Special requirements:** Appropriate hazardous material (haz-mat) training (DOT & IATA).
- Supplies needed:** Box and labeling in accordance with Title 49 CFR 173.424 requirements.

Introduction: Safety is a top priority at NOAA. The NOAA Safety and Environmental Compliance Office (SECO) is the lead organization for safety at NOAA. We want all employees and contractors to "promote a safe and healthy, environmentally responsible, energy efficient work environment". NOAA is involved in world-class measurements and research on ozone depleting, climate or greenhouse, and air quality trace. The electron capture detector (ECD) is one of the most sensitive detectors used to measure atmospheric trace gases containing oxygen, sulfur, fluorine, chlorine, bromine, or iodine atoms. When the ECD is coupled to a gas chromatograph (GC) to separate trace gases from air, this detection method (GC-ECD) is unique for detecting low atmospheric levels of trace gases in the parts-per-billion (ppb, 1 part in 10^9) and parts-per-trillion (ppt, 1 part in 10^{12}) ranges. Occasionally, an ECD will need to be shipped from a field site to Boulder for repair. This SOP addresses these rare instances.

Procedure:

1. NOAA instrument technician communicates with GC point of contact and it is determined that the ECD requires shipment to Boulder for inspection and/or repair.
2. The ECD and its housing (or can) will be removed for shipment to Boulder. The can will not be opened on site.
3. **Shipment of an ECD will ONLY occur during the austral summer months (October to February) and via the U.S. Antarctic Program (USAP) cargo system. An ECD will NEVER be sent from South Pole via personal baggage or hand-carried to New Zealand to then be forward shipped to Boulder.**
4. Summer ECD shipments will be sent from South Pole Station, Antarctica to USAP cargo facility in Christchurch, New Zealand via military aircraft. This facility is operated under the direction of the U.S. National Science Foundation (NSF) and logistics contractor and Raytheon Polar Services Company (RPSC). From NZ, the shipment will be forwarded on to Boulder by the USAP cargo personnel. The New Zealand USAP cargo manger is, Mike Skevington, email: mike.skevington@usap.gov. The USAP cargo personnel will secure the package after removal from the military flight to NZ and arrange commercial shipping for the package to Boulder (this may include: surface and/or air service).
5. Confirm haz-mat certified shipping contacts for both the shipping party and the receiving party:

- a. In Boulder, the site haz-mat specialist is Mr. Robert Zook, 303-497-3662, Robert.Zook@noaa.gov
 - b. At South Pole, the cargo manager is Melanie Miller, email: Melanie.Miller.Contractor@usap.gov. The haz-mat specialist is part of the NSF/USAP South Pole cargo department. Each summer season the cargo personnel are trained prior to deployment.
6. The haz-mat certified shipper (at South Pole) will package the ECD and label the box in accordance with NOAA's current NRC authority, Amendment 43 of license # 05-11997-01. Packaging materials provided by NOAA.
7. Shipment via appropriate method and in coordination/notification with project POC (Geoff Dutton), ESRL-GMD radiation safety officer (Brian Vasel), and Boulder haz-mat specialist (Robert Zook).

In no circumstance will an ECD ever be shipped to Boulder without following this established written SOP.